



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,352	08/15/2001	Brian Cunningham	00-1123-D	3472

7590

07/24/2003

Lisa M. W. Hillman
McDonnell Boehnen Hulbert & Berghoff
32nd Floor
300 S. Wacker Drive
Chicago, IL 60606

EXAMINER

YANG, NELSON C

ART UNIT

PAPER NUMBER

1641

DATE MAILED: 07/24/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 09/930,352	Applicant(s) CUNNINGHAM ET AL.	
	Examiner Nelson Yang	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-153 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-153 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- 111-119
- I. Claims 1-19, 51, 52, 59-69, 71-74, 100, 101, 110, 111-119, 120-125, 129-146, drawn to a biosensor for detecting the binding of one or more specific binding substances, classified in class 435, subclass 6.
- II. Claims 20, 34, 50, 56-58, 147-149, 150, 152, drawn to a method of detecting the binding of one or more specific binding substances, classified in class 356, subclass 925.
- III. Claims 21, 35, 151, 153, drawn to a method of detecting the binding of one or more specific binding substances at distinct locations, classified in class 356, subclass 925.
- IV. Claims 22, 36, drawn to a method of detecting activity of an enzyme, classified in class 424, subclass 146.1.
- V. Claims 23-33, 51, 52, 59-69, 126-128, drawn to a biosensor for detecting the binding of one or more specific binding substances, classified in class 359, subclass 580.
- VI. Claims 37-49, 51, 52, 59-69, drawn to a biosensor comprised of an optically transparent material that conducts electricity, classified in class 359, subclass 585.
- VII. Claims 50, drawn to a method of measuring the amount of one or more binding partners in a test sample, classified in class 356, subclass 317.

- VIII. Claim 70, drawn to a method of detecting binding of one or more specific binding substances *in vivo*, classified in class 424, subclass 9.341.
- IX. Claims 75-84, drawn to a method for determining a location of a resonant peak for a binding partner, classified in class 356, subclass 305.
- X. Claims 85-87, drawn to a biosensor comprising a two-dimensional grating having a pattern of concentric rings, classified in class 359, subclass 574.
- XI. Claims 88-90, drawn to a biosensor comprising an array of holes or posts arranged in hexagons in a closely packed array, classified in class 359, subclass 569.
- XII. Claims 91-95, drawn to a biosensor having two two-dimensional gratings, with a substrate layer supporting the bottom surface of the second two-dimensional grating, classified in class 359, subclass 586.
- XIII. Claims 96-99, drawn to a biosensor having two two-dimensional gratings, with a substrate layer supporting the bottom surface of the first two dimensional grating, classified in class 359, subclass 587.
- XIV. Claims 102-104, drawn to a method of detecting an interaction of a first molecule with a second test molecule, classified in class 435, subclass 5.
- XV. Claim 105, drawn to a biosensor comprising an amine activated, aldehyde activated, or nickel activated two-dimensional grating, classified in class 359, subclass 566.

Art Unit: 1641

- XVI. Claim 106, drawn to a biosensor comprising an amine activated, aldehyde activated, or nickel activated two-dimensional grating having a pattern of concentric rings, classified in class 359, subclass 574.
- XVII. Claim 107, drawn to array of holes or posts arranged in hexagonal arrays and an amine activated, aldehyde activated or nickel activated grating, classified in class 359, subclass 569.
- XVIII. Claim 108, drawn to a biosensor comprising two two-dimensional gratings, where the top surface of the first two-dimensional grating is amine activated, aldehyde activated, or nickel activated, classified in class 359, subclass 586.
- XIX. Claim 109, drawn to a biosensor comprising two two-dimensional gratings, supported by a substrate layer in the middle, classified in class 359, subclass 587.
- XX. Claims 53-55, drawn to a method of immobilizing one or more specific binding substances onto a biosensor, classified in class 436, subclass 518.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II-IV, VII-IX and XIV; V and II-IV, VII-IX and XIV; VI and II-IV, VII-IX, XIV; X and II-IV, VII-IX, XIV; XI and II-IV, VII-IX, XIV; XII and II-IV, VII-IX, XIV; XIII and II-IV, VII-IX, XIV; XV and II-IV, VII-IX, XIV; XVI and II-IV, VII-IX, XIV; XVIII and II-IV, VII-IX, XIV; XIX and II-IV, VII-IX, XIV are related as process and apparatus for its practice. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different apparatus or (2) the apparatus as claimed can be used in a materially different process

Art Unit: 1641

of using that product (MPEP § 806.05(h)). In the instant case inventions II, III, IV, IX and XIV can be performed by either inventions I, V, VI, X, XI, XII, XIII.

3. Inventions I and V, VI, IX-XIII, XV-XIX are independent and distinct inventions.

Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, invention I, V, VI, IX-XIII, XV-XIX, have separate utility such as use in various detection systems as specified in claim 51, 52, 71-74, and as various biosensor compositions as specified in claim 59-66 and 66-69. See MPEP § 806.05(d).

Invention I reflects a narrow band of optical wavelengths when illuminated with a broad band of optical wavelengths. Invention V reflects light, at a first single optical wavelength and at a second optical wavelength if one or more specific binding surfaces are immobilized, when illuminated with a broad band of optical wavelengths, wherein the reflection at the second optical wavelength of light results from optical interference. Invention VI produces resonant grating effect on the reflected radiation spectrum when illuminated. Invention X is a biosensor comprised of a two-dimensional grating having a pattern of concentric rings produces a reflected radiation spectrum independent of an illumination polarization angle of the illuminating light beam. Invention XI is a biosensor comprised of an array of holes or posts arranged in closely packed arrays of hexagons where one or more specific binding substances are immobilized. Invention XII is a biosensor comprised of a biosensor with two two-dimensional gratings, with a substrate layer supporting the bottom surface of the second two-dimensional grating. Invention XIII is a biosensor comprised of a biosensor with two two-dimensional gratings, with a substrate layer supporting the bottom surface of the first two-dimensional grating. Invention XV is a

biosensor comprised of an amine activated, aldehyde activated or nickel activated two-dimensional grating. Invention XVI is a biosensor comprised of an amine activated, aldehyde activated or nickel activated two-dimensional grating having a pattern of concentric rings. Invention XVII is a biosensor comprised of an array of holes or posts arranged in closely packed arrays of hexagons and an amine activated, aldehyde activated, or nickel activated grating. Invention XVIII is a biosensor comprised of a second two-dimensional grating attached to the bottom surface of a first two-dimensional grating, where the top surface of the first two-dimensional grating is amine activated, aldehyde activated or nickel activated. Invention XIX is a biosensor with a substrate layer between two two-dimensional gratings, where the top surface of the first two-dimensional grating is amine activated, aldehyde activated or nickel activated.

Inventions II-IV, VII-IX, XIV, and XX are also independent and distinct inventions. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation and different functions. Invention II is a method to detect the binding of one or more specific binding substances. Invention III is a method to detect binding of specific binding substances at distinct locations, by coating the two-dimensional grating of a biosensor with an array of distinct locations containing the specific binding substances. Invention IV is a method of detecting the activity of an enzyme. Invention VII is a method for measure the amount of binding partners in a test sample. Invention VIII is a method of detecting binding of one or more specific binding substances *in vivo*. Invention IX is a method for determining a location of a resonant peak for a binding partner in a resonant reflectance spectrum. Invention XIV is a method of

Art Unit: 1641

detecting interaction between a first molecule with a second test molecule. Invention XX is a method for immobilizing one or more specific binding substances on a biosensor.

4. Inventions XX and I, V, VI, X, XI, XII, XIII, XVXVI, XVII, XVIII, XIX are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case XX can be used to immobilize one or more specific binding substances onto any of the biosensors of I, V, VI, X, XI, XII, XIII, XVXVI, XVII, XVIII, and XIX. Furthermore, the binding substances could be immobilized on the biosensors by a different process, such as using a thiol coating.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for one group is not required for others, restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is 703-305-4508. The examiner can normally be reached on 8:30-5:00.

Art Unit: 1641

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V Le can be reached on 703-305-3399. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

NY
July 15, 2003



LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

07/21/03